09-07-06

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Robert S. Bosko	§	Atty. Docket No: L-0170.96
	§	
Application No: 10/606,873	§	Examiner: M. Savage
	§	
Filed: June 26, 2003	§	
	§	Group Art Unit: 1724
For: METHOD AND APPARATUS FOR A WATER FILTER BACKFLUSH	§	
	§	

APPEAL BRIEF

MAIL STOP APPEAL BRIEF - PATENTS
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P.O. Box 1450
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Sir:

Applicant timely presents its Brief on Appeal for the referenced application.

REAL PARTY IN INTEREST

The real party in interest is Lancer Partnership, Ltd., a Texas limited liability partnership, having a business address of 6655 Lancer Blvd., San Antonio, Texas 78219

RELATED APPEALS AND INTERFERENCES

There are no related appeals and interferences of which Applicant is aware.

STATUS OF THE CLAIMS

Claims 1-3, 5-8, 36-38, and 40-42 remain in the referenced application. Claims 4 and 39 have been canceled. Claims 9-35 have been withdrawn from consideration, and are canceled. Claims 1-3, 5-8, 36-38, and 40-42 stand rejected under 35 U.S.C. §103(a) by Hisada (U.S. Patent 6,190,557 B1, hereinafter referred to as Hisada) in view of McGowan (U.S. Patent No. 6,562,246, hereinafter referred to as McGowan). Applicant is appealing the rejections of Claims 1-3, 5-8, 36-38, and 40-42.

STATUS OF AMENDMENTS

Applicant's Amendment "B" dated January 25, 2006, was entered into the referenced application. Applicant's Amendment After Final dated June 5, 2006 has not been entered into the referenced application for the purposes of this Appeal.

SUMMARY OF CLAIMED SUBJECT MATTER

The claimed subject matter entails methods for backflushing a filtration device with purified water. Filtration devices in this disclosure include filters that remove particles up to a preselected size range (see page 2, lines 15-16). Purified water includes water having a lower total dissolved solids reading than the water being filtered, preferably with a total dissolved solids reading fifty percent lower than that of the water being filtered, more preferably with a total dissolved solids reading eighty percent lower than that of the water being filtered, and still,

more preferably, with a total dissolved solids reading ninety five percent lower than that of the water being filtered. Those skilled in the art will recognize that purified water may be produced using any suitable purification process, such as reverse osmosis, steam distillation, or deionization. Backflushing of a filtration device allows the backflush media to lift compacted particles (see page 5, lines 4-12, in light of Figure 1). In the simplest form, purified water is used to rinse or backflush a filter or filter cartridge (see page 4, lines 19-20, in light of Figures 1 and 2). Further embodiments include a pressurized flow and a submersing tank to backflush or submerge a filter in purified water (see page 5, lines 21-23, in light of Figures 1, 2 and 3). Water with a low total dissolved solids reading is essentially unsaturated and able to dissolve particles attached to the filter medium. Various embodiments of the invention may be employed to extend the life of filters, unclog clogged filters or keep new filters from clogging. Backflushing of a filter may be accomplished manually or through an embodiment of this invention that automatically backflushes a filter on a scheduled basis. The particles are then removed from the filter medium through the use of a second flowpath terminating in a sanitary drain or other disposal.

An alternative method includes utilizing a primary or filtered flowpath used during normal operations (see page 6, lines 6-11, in light of Figure 3) and a secondary flowpath used for backflushing routines (see page 6, lines 12-18, and page 7, lines 1-2, in light of Figure 3), wherein purified water is the source water used for backflushing the filter (see page 8, lines 4-9, in light of Figure 3). Switching a set of valves substantially simultaneously provides the two separate and distinct flowpaths. The use of the secondary flowpath allows purified water to enter the primary flowpath, and move backwards through the filter. The water is then purged from the filtered flowpath to remove concentrations of solids that have been displaced from the filter by

the backflushing routine (see page 8, lines 10-23, in light of Figure 3, and page 9, lines 1-3). Switching of the valves may be accomplished manually (see page 8, lines 21-23, and page 9, lines 1-3, in light of Figures 4 and 5) or a controller (see page 9, lines 9-19, in light of Figure 6-7) may be added to the system to provide the capability of automatically backflushing the filter on a scheduled basis.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

Whether claims 1-3, 5-8, 36-38, and 40-42 are patentable under 35 U.S.C. §103(a) over Hisada in view of McGowan.

ARGUMENTS

CLAIM 1

Claim 1 stands rejected under 35 U.S.C. §103(a) by Hisada (U.S. Patent 6,190,557 B1, hereinafter referred to as Hisada) in view of McGowan (U.S. Patent No. 6,562,246, hereinafter referred to as McGowan). The Examiner asserts that "Hisada discloses a method of cleansing a filter 1 including passing water from a water source through a filter producing filtered water (see lines 6-18 of col. 14), providing a source of purified water (e.g. filtered water from the permeate side of the reverse osmosis membrane (see Fig. 6 and lines 35-49 of col. 14)), the purified water having a lower total dissolved solids reading than the water being filtered since a reverse osmosis filter can remove up to 99% dissolved minerals from water, and exposing the filter to the purified water (e.g. via backwashing as shown in Fig. 6 with permeate)." In summary, the Examiner asserts that Hisada provides a filter that creates "purified water" that may be used to backflush the filter, and the Examiner has placed Hisada's filter into McGowan's device to create a backflush unit that produces purified water and backflushes with the purified water.

Applicant respectfully disagrees with the Examiner regarding the above-recited rejection.

Applicant's claim 1 recites, "passing water from a water source through a filter, thereby producing filtered water," for delivery to an end use device. Applicant respectfully contends that filters produce" filtered water." Applicant's third step of claim 1 recites, "providing a source of purified water, wherein the purified water has a lower total dissolved solids reading than the water being filtered." Applicant further respectfully contends that "purified water" must be produced by a "purification process." Applicant's fourth step of claim 1 recites, "exposing the filter to the purified water." As such, a filter is exposed to "purified water" made through a "purification process."

Applicant respectfully asserts that Hisada's invention is entitled, "SPIRAL WOUND TYPE MEMBRANE ELEMENT, RUNNING METHOD AND WASHING METHOD THEREOF," and therefore, Hisada must be teaching a purification membrane. Illustratively, the purification membrane is a reverse osmosis membrane. Applicant respectfully contends that the Examiner has inappropriately utilized the terms "filter" and Hisada's "spiral wound membrane element 1" interchangeably.

Applicant respectfully asserts that Applicant's invention is drawn to methods for cleansing a "filter" with a "purified water" source. Filters are commonly utilized in many technologies, and are capable of removing only suspended particles over a predetermined size, as filtering is a mechanical process, whereby the oversize suspended particles physically cannot move through the filtering component. Accordingly, filters provide an inexpensive means of removing sediments and other suspended debris, however, the filters build up deposits over time, and must be cleaned or replaced. Filters do not remove the dissolved solids in a fluid, as this happens at the ionic level (magnitudes smaller than the smallest orifices of a filtering component).

Applicant's invention is drawn to cleansing a filter with "purified water." Applicant respectfully asserts that Applicant has defined "purified water" in Applicant's specification as, "water having a lower total dissolved solids reading than the water being filtered, preferably with a total dissolved solids reading fifty percent lower than that of the water being filtered, more preferably with a total dissolved solids reading eighty percent lower than that of the water being filtered, and still more preferably with a total dissolved solids reading ninety five percent lower than that of the water being filtered." Applicant has further stated in the specification that, "purified water may be produced using any suitable purification process, such as reverse osmosis, steam distillation or deionization."

Applicant's invention teaches cleansing Applicant's filter with "purified water," as defined in Applicant's specification. Applicant's invention further teaches a "filtered flowpath" that delivers "filtered water" to an end use device, as shown in Figure 1 of Appendix A. As filters are incapable of removing dissolved solids from the water, in Applicant's invention, the total dissolved solids reading (TDS) of the water being filtered is substantially identical to the total dissolved solids reading of the "filtered water" that is delivered to the end use device. Conversely, in Hisada in view of McGowan, the total dissolved solids reading of the water prior to the separation membrane, herein represented with an amount equivalent to that shown in Applicant's summary sketch of Figure 1, as TDS = A, and suspended particles = X, is reduced to TDS < A, and suspended particles < X, after passing through Hisada's separation membrane. Accordingly, in the Examiner's quest to reconstruct the Applicant's invention, the Examiner has inadvertently altered the Applicant's invention, as well as the type of fluid delivered to Applicant's end use devices. Accordingly, Applicant respectfully asserts that the Examiners combination clearly does not read on the Applicant's invention, as the Examiner's combination

fails to create the Applicant's invention. Applicant's invention does not alter the total dissolved solids reading of the filtered water delivered to end use devices, and Hisada in view of McGowan clearly alters the total dissolved solids reading of the water passing through Hisada's membrane, thereby delivering "purified water" to end use devices. One of ordinary skill in the art will readily recognize that there is a difference between water having a high total dissolved solids reading and water having a low total dissolved solids reading, and accordingly, the United States Patent and Trademark Office has separate classifications for them, specifically subclasses 348 Filters and 652 Hyperfiltration.

As Applicant's arguments have not been persuasive in previous amendments, Applicant is presenting additional materials that explicitly reinforce Applicant's arguments. As presented in Appendix B, Class 210 of the Manual of Patent Classification, United States Patent and Trademark Office, is entitled, "LIQUID PURIFICATION OR SEPARATION," and includes subclasses: 348 Filters and 652 Hyperfiltration (e.g. reverse osmosis, etc.). The CLASSIFICATION DEFINITIONS for each subclass as presented by the United Stated Patent and Trademark Office are provided in Appendix B, and below, as follows:

348 This subclass is indented under the class definition. Apparatus in which constituents of a prefilt (usually solids and liquid) are separated by passing the prefilt through a medium having openings which retain at least one constituent.

650 Filtering through membrane (e.g., ultrafiltration): This subclass is indented under subclass 649. Process in which a liquid is passed through a skinlike barrier which serves to retain dissolved or colloidally suspended matter, passing only those constituents which are, per se, fluid, e.g., solvent.

652 Hyperfiltration (e.g., reverse osmosis, etc.): This subclass is indented under

subclass 650. Process in which dissolved material (i.e., including ionic) is removed from a liquid. (1) Note. Reverse osmosis is the usual process for which this subclass provides. See OSMOSIS under the GLOSSARY.

In reviewing the class and subclass definitions, it is clearly evident that differences exist between filters and purification membranes. Filters merely separate out based upon size, and do not alter the total dissolved solids makeup of the liquid, as this process must occur on the molecular level. Alternatively, purification membranes (subclass 650) "retain dissolved or colloidially suspended matter, passing only those constituents which are per se, fluid." Accordingly, Applicant expressly recites that the Examiner's combination of Hisada in view of McGowan clearly alters the total dissolved solids reading as it filters the water, thereby delivering purified water to end use devices. Applicant respectfully asserts that the combination of Hisada in view of McGowan is improper, as the combination clearly alters the total dissolved solids reading of the water passing through Hisada's membrane. Applicant delivers "filtered water" to Applicant's end use device, not "purified water." The delivery of "purified water" to the end use device is markedly different than the delivery of "filtered water" to the end use device. Applicant respectfully asserts that Applicant's arguments do have merit, and should be persuasive, as Applicant's invention is designed to deliver "filtered water" to Applicant's end use devices. Accordingly, Applicant respectfully asserts that Applicant's claim 1 is patentable over Hisada in view of McGowan, and respectfully requests that the rejections of claim 1 under 35 U.S.C. §103(a) be withdrawn.

<u>CLAIM 2</u>

Claim 2 stands rejected under 35 U.S.C. §103(a) as being anticipated by Hisada in view of McGowan. Applicant respectfully asserts that the patentability of claim 2 lies with the

patentability of claim 1.

CLAIM 3

Claim 3 stands rejected under 35 U.S.C. §103(a) as being anticipated by Hisada in view of McGowan. Applicant respectfully asserts that the patentability of claim 3 lies with the patentability of claim 1.

CLAIM 5

Claim 5 stands rejected under 35 U.S.C. §103(a) as being anticipated by Hisada in view of McGowan. Applicant respectfully asserts that the patentability of claim 5 lies with the patentability of claim 1.

CLAIM 6

Claim 6 stands rejected under 35 U.S.C. §103(a) as being anticipated by Hisada in view of McGowan. Applicant respectfully asserts that the patentability of claim 6 lies with the patentability of claim 1.

CLAIM 7

Claim 7 stands rejected under 35 U.S.C. §103(a) as being anticipated by Hisada in view of McGowan. Applicant respectfully asserts that the patentability of claim 7 lies with the patentability of claim 1.

CLAIM 8

Claim 8 stands rejected under 35 U.S.C. §103(a) as being anticipated by Hisada in view of McGowan. Applicant respectfully asserts that the patentability of claim 8 lies with the patentability of claim 1.

CLAIM 36

Claim 36 stands rejected under 35 U.S.C. §103(a) by Hisada in view of McGowan. The Examiner asserts that Hisada discloses a method for backflushing a filter including flowing water from a water source 51 (Figure 4) through a primary flowpath in a filtered flowpath 52, providing a source of purified water from the filter having a lower total dissolved solids reading than the water being filtered (e.g. Hisada's filter is a Reverse Osmosis membrane that removes up to 99% of the total dissolved solids from water), providing a secondary flowpath allowing purified water into the filtered flowpath (Figure 6), and flowing the purified water in the secondary flowpath, wherein the secondary flowpath allows the purified water to flow backwards through the filter for a predetermined interval to remove or dissolve filtered media or unclog a filter in the primary flowpath (see Figure 6, and lines 35-49 of col. 14).

Applicant respectfully disagrees with the Examiner's rejection, because the Examiner has utilized the terms, "filter" and "purification membrane" interchangeably, and therefore has substituted "filtered water" with "purified water." Applicant has distinguished between "filtered water" and "purified water" in the specification. As recited in the specification, "Example water treatment methods include reverse osmosis, deionization, and steam generation. Water treatment employing these methods typically require a filter in line prior thereto to remove particles up to a preselected size range," (page 2, lines 14-16). Applicant has attempted to clarify the method steps of Applicant's claim 36 to distinguish between "filtered water" and "purified water." Applicant respectfully asserts that the arguments for claim 1 regarding the differences between "filtered water" and "purified water" are pertinent to claim 36.

The first step of claim 36 recites, "flowing water from a water source through a primary flowpath in a filtered flowpath to an end use device, thereby delivering filtered water to the end

use device." As described in the arguments for claim 1, Hisada in view of McGowan delivers "purified water" to an end use device. Applicant respectfully contends that "purified water" is different than "filtered water," as previously argued in the total dissolved solids argument of claim 1, and therefore, Hisada in view of McGowan does not disclose the first step of claim 36 that delivers "filtered water" to the end use device.

The second step of claim 36 recites, "providing a source of purified water, wherein the purified water has a lower total dissolved solids reading than the water being filtered." At this point, Applicant's first step of claim 36 provides a filtered flowpath (through the use of a filter), and a separate purified water source (water made through the use of a purification process). Hisada in view of McGowan creates "purified water" and backflushes Hisada's filter (really a purification membrane) with "purified water". As such, Hisada in view of McGowan delivers "purified water" to the end use device. Applicant's invention delivers "filtered water" to Applicant's end use device.

The third and fourth steps of claim 36 provide for switching from a primary flowpath to a secondary flowpath that allows "purified water" from the purified water source to enter the primary flowpath, and move backwards through the filter, thereby providing a cleansing feature. The final step provides for switching back to the primary flow path "to resume the delivery of filtered water to the end use device." As such, the fifth step of Applicant's invention is not disclosed by Hisada in view of McGowan, because, Hisada in view of McGowan delivers "purified water" to the end use device. As previously argued, "filtered water" is markedly different from "purified water." Accordingly, Applicant respectively asserts that claim 36 is patentable over Hisada in view of McGowan, and respectfully requests that the rejection of claim 36 under 35 U.S.C. §103(a) be withdrawn.

CLAIM 37

Claim 37 stands rejected under 35 U.S.C. §103(a) as being anticipated by Hisada in view of McGowan. Applicant respectfully asserts that the patentability of claim 37 lies with the patentability of claim 36.

CLAIM 38

Claim 38 stands rejected under 35 U.S.C. §103(a) as being anticipated by Hisada in view of McGowan. Applicant respectfully asserts that the patentability of claim 38 lies with the patentability of claim 36.

CLAIM 40

Claim 40 stands rejected under 35 U.S.C. §103(a) as being anticipated by Hisada in view of McGowan. Applicant respectfully asserts that the patentability of claim 40 lies with the patentability of claim 36.

CLAIM 41

Claim 41 stands rejected under 35 U.S.C. §103(a) as being anticipated by Hisada in view of McGowan. Applicant respectfully asserts that the patentability of claim 41 lies with the patentability of claim 36.

CLAIM 42

Claim 42 stands rejected under 35 U.S.C. §103(a) as being anticipated by Hisada in view of McGowan. Applicant respectfully asserts that the patentability of claim 42 lies with the patentability of claim 36.

In view of the foregoing, Applicant respectfully requests the Final Rejection of the Examiner dated January 25, 2006, be reversed.

Respectfully submitted,

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CERTIFICATE OF MAILING

I hereby certify that this correspondence is being deposited with the United States Postal Service "Express Mail Post office to Addressee" service under 37 CFR 1.10 on the dated indicated below, addressed to the Commissioner for Patents, P.O. Box 1450, Arlington, VA 22313-1450.

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John Vira

CLAIMS APPENDIX

Claim 1 (previously presented): A method of cleansing a filter, comprising:

passing water from a water source through a filter, thereby producing filtered water;

delivering the filtered water to an end use device;

providing a source of purified water, wherein the purified water has a lower total dissolved solids reading than the water being filtered; and

exposing the filter to the purified water.

Claim 2 (original): The method of claim 1, wherein the filter includes a filter cartridge.

Claim 3 (original): The method of claim 1, wherein the purified water includes water treated by a reverse osmosis, a steam distillation or a deionization process.

Claim 4 (canceled).

Claim 5 (original): The method of claim 1, wherein the purified water has a total dissolved solids reading at least fifty percent less than water being filtered.

Claim 6 (original): The method of claim 1, wherein the purified water has a total dissolved solids reading at least eighty percent less than water being filtered.

Claim 7 (original): The method of claim 1, wherein the purified water has a total dissolved solids reading at least ninety five percent less than water being filtered.

Claim 8 (previously presented): The method of claim 1, further comprising; backflushing the filter with the purified water.

Claims 9-35 (canceled).

Claim 36 (previously presented): A method for backflushing a filter, comprising:

a. flowing water from a water source through a primary flowpath in a filtered flowpath to an end use device, thereby delivering filtered water to the end use device;

b. providing a source of purified water, wherein the purified water has a lower total dissolved solids reading than the water being filtered;

c. switching an inlet valve, a drain valve, and a flush valve in the filtered flowpath from the primary flowpath to a secondary flowpath that allows purified water into the filtered flowpath;

d. flowing the purified water into the secondary flowpath, wherein the secondary flowpath allows the purified water to flow backwards through the filter for a predetermined interval to remove or dissolve filtered media or unclog a filter in the primary flowpath; and

e. switching the inlet valve, the drain valve, and the flush valve from the secondary flowpath to the primary flowpath to resume the delivery of filtered water to the end use device.

Claim 37 (previously presented): The method for backflushing a filter as recited in claim 36, further comprising:

d. repeating steps c.-e. to provide a continued cleansing of the filter.

Claim 38 (original): The method of claim 36, wherein the purified water includes water treated by a reverse osmosis, a steam distillation or a deionization process.

Claim 39 (canceled).

Claim 40 (original): The method of claim 36, wherein the purified water has a total dissolved solids reading at least fifty percent less than water being filtered.

Claim 41(original): The method according to claim 36, wherein the purified water has a total dissolved solids reading at least eighty percent less than water being filtered.

Claim 42 (original): The method of claim 36, wherein the purified water has a total dissolved solids reading at least ninety five percent less than water being filtered.

Evidence Appendix

Applicant has provided Appendix A and Appendix B for entry into the Evidence Appendix.

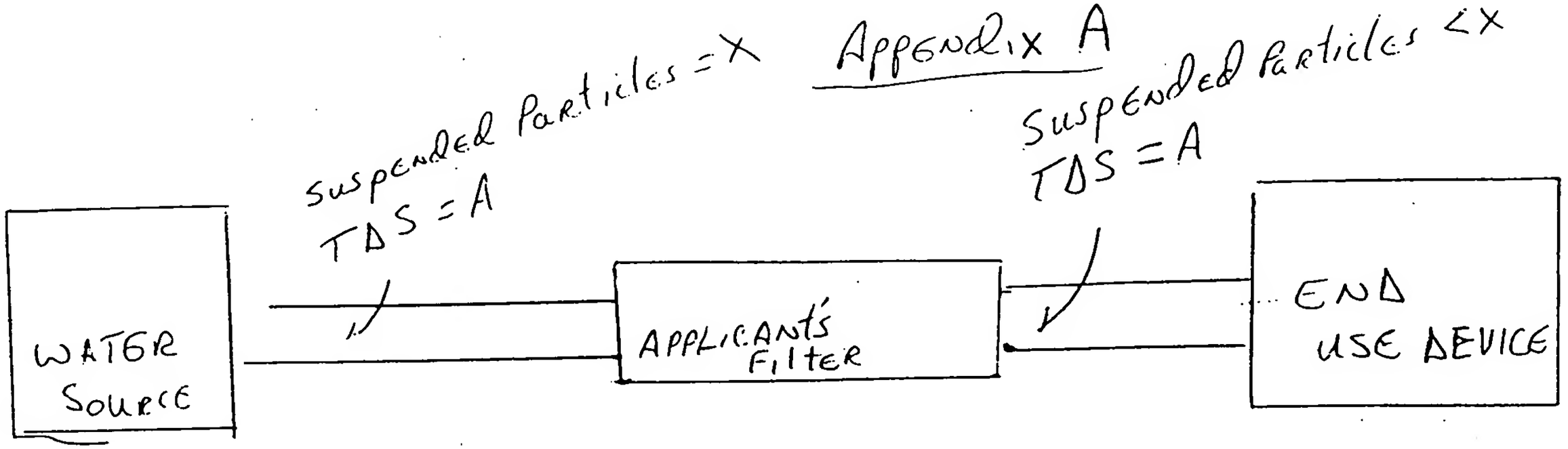
Appendix A

Figure 1 provides a comparison of the Applicant's invention and Hisada in view of McGowan with respect to the condition of fluid delivered to respective end use devices.

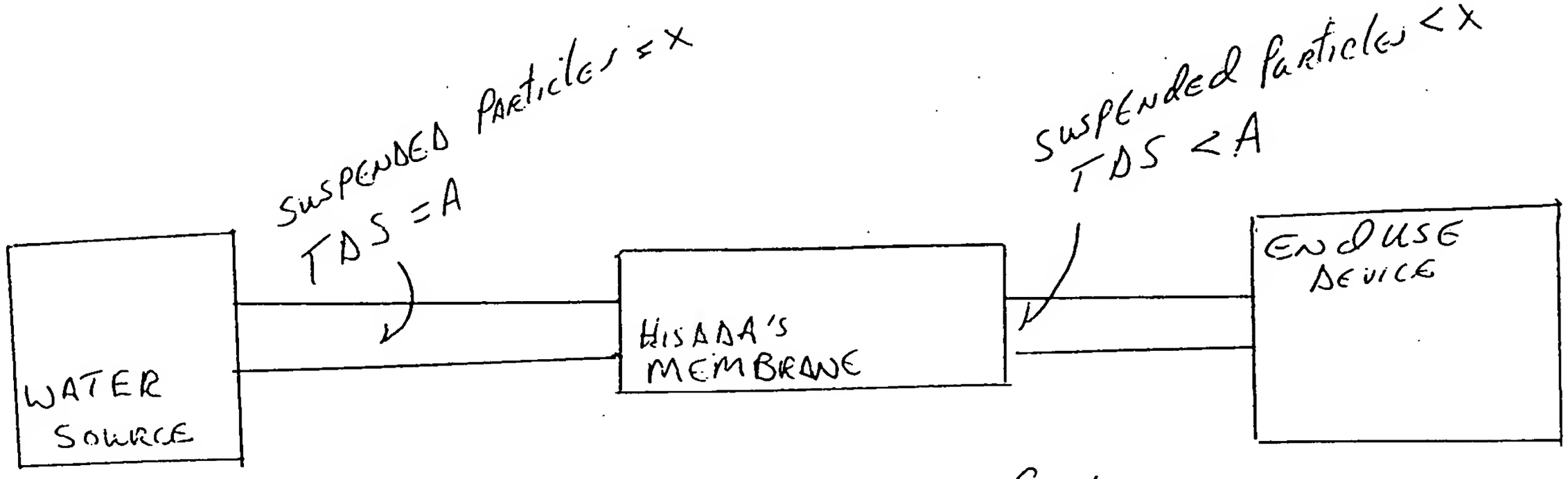
Appendix B

Appendix B provides copies of the United States Patent and Trademark Office patent classification definitions for classes 348, 650, and 652.

Appendix A



Applicant's Invention



HISADA INVIEW of McGOWAN

Fig. 1

16-A1

342 This subclass is indented under subclass 323.1. Apparatus wherein the filter units are arranged one within another.

SEE OR SEARCH THIS CLASS, SUBCLASS:
315, for spaced diverse filters, one within another.
337+, for nested filter units arranged for series prefilt flow.

343 This subclass is indented under subclass 323.1. Apparatus in which the units alternate with liquid receivers, alternate receivers acting respectively as liquid inlet and discharge means, at least one of a pair of liquid receivers separating one filter medium from another and contacting the separated filter mediums on opposite faces.

SEE OR SEARCH THIS CLASS, SUBCLASS:
417, for similar devices in which the alternate liquid receivers are located within a continuous body of filter medium.

344 This subclass is indented under subclass 323.1. Apparatus in which each filter unit comprises a filter medium and an imperforate pan-like liquid receiver substantially coextensive with the filter medium.

SEE OR SEARCH THIS CLASS, SUBCLASS:
224, for a sectional chamber press type filter.
492, for stacked dissimilar elements, the entire stack forming a single unit.

345 This subclass is indented under subclass 323.1. Apparatus in which the units are radially arranged or which are connected to means extending radially from a central header.

346 This subclass is indented under subclass 323.1. Apparatus in which the units each comprise a filter medium enclosing a space, the filter medium having separate or distinct walls.

SEE OR SEARCH THIS CLASS, SUBCLASS:
331, for similar structure among movable elements.
486+, for a spaced wall type filter unit.
492, for filter elements divided into alternate prefilt and filtrate spaces by alternately arranged dissimilar elements.

347 This subclass is indented under subclass 346. Apparatus in which there is a header extending centrally of the group of spaced wall type filter elements.

348 This subclass is indented under the class definition. Apparatus in which constituents of a prefilt (usually solids and liquid) are separated by passing the prefilt through a medium having openings which retain at least one constituent.

SEE OR SEARCH CLASS:
4, Baths, Closets, Sinks, and Spittoons, subclass 286 for strainers specialized for that class.
55, Gas Separation, appropriate subclasses beginning with subclass 474 for gas filters.
166, Wells, subclasses 227+ for screens peculiar to wells.
209, Classifying, Separating, and Assorting Solids, subclasses 233+ for sifters for solid material.

349 This subclass is indented under subclass 348. Apparatus provided with means dampening pulsations in liquid flow or for trapping a gas, usually air.

SEE OR SEARCH THIS CLASS, SUBCLASS:
410, for a device which traps a gas and then releases it to blowback a filter medium.

350 This subclass is indented under subclass 348. Apparatus in which a filter medium is enclosed by a receptacle and provided with adjustable or movable means to compress the filtering material.

SEE OR SEARCH THIS CLASS, SUBCLASS:
226, for a sectional pressure type filter and porous filler.

of withdrawing from, or returning to, the body such a fluid.

260, Chemistry of Carbon Compounds, appropriate subclass for a method of obtaining an organic compound from a biological fluid.

424, Drug, Bio-Affecting and Body Treating Compositions, for a composition comprising a biological fluid for treating a body and a process of making such a composition.

436, Chemistry: Analytical and Immunological Testing, subclasses 1+ for a method of testing or analysing a biological fluid.

646 **Hemodialysis:**
This subclass is indented under subclass 645. Process in which blood is treated or purified.

(1) Note. The process generally duplicates the function of the kidney.

SEE OR SEARCH CLASS:

128, Surgery, for a method of treating blood and a significant step of withdrawing from or returning to a living body the blood being treated.

422, Chemical Apparatus and Process Disinfecting, Deodorizing, Preserving, or Sterilizing, subclasses 44+ for blood oxygenating apparatus; however, combined blood purifying and oxygenating apparatus is in this class (210).

435, Chemistry: Molecular Biology and Microbiology, subclass 2 for a process of oxygenating blood, but the combined process of purifying and oxygenating blood is classifiable in this class (210).

647 **Maintaining critical concentration(s):**
This subclass is indented under subclass 646. Process in which the amount of at least one constituent of the treated fluid is kept at or between predetermined limits.

(1) Note. The concentration of either the constituent it is desired to remove or of some other constituent is included, e.g., maintaining the potassium level in an artificial kidney process.

648 **Including regenerating or rehabilitating the extracting liquid in liquid/liquid solvent or colloidal extraction:**
This subclass is indented under subclass 644. Process in which the liquid into which a constituent has migrated from the treated liquid is itself treated to remove such constituent and thereby placed in condition for reuse.

(1) Note. The extracting liquid is sometimes referred to as the dialysizing liquid and usually is recycled.

649 **Diffusing or passing through septum selective as to material of a component of liquid:**
This subclass is indented under subclass 634. Process in which a constituent of a liquid migrates through a skinlike partition as set forth in the Glossary under Semipermeable membrane.

(1) Note. The process provided for in this subclass is more than filtration or screening to a very fine stage, but includes diffusion of usually a solvent through a material based on the chemical potential of the various materials of the liquid and membrane. A rather complete treatment of the process is given in Kirk-Othmer Encyclopedia of Chemical Technology-Dialysis-Vol. 7 pp. 1-21; and Osmosis, Osmotic Pressure and Reverse Osmosis-Vol. 14, pp. 345-355.

650 **Filtering through membrane (e.g., ultrafiltration):**
This subclass is indented under subclass 649. Process in which a liquid is passed through a skinlike barrier which serves to retain dissolved or colloidally suspended matter, passing only those constituents which are, per se, fluid, e.g., solvent.

(1) Note. For placement in this subclass, some, but not all, dissolved matter must be retained, e.g., a solute such as protein, soluble synthetic resins or starch may be retained while ionized salts may pass through the membrane. Retention of ionized material is provided for in indented subclasses 652+.

16-B2

651 **Removing specified material:**
This subclass is indented under subclass 650. Process in which a constituent removed from the liquid is positively identified.

(1) Note. The material itself rather than a characteristic must be identified. For example, oily material, and food waste, or organic are not considered to be identified material; however, protein and named bacteria are considered to be specified material.

652 **Hyperfiltration (e.g., reverse osmosis, etc.):**
This subclass is indented under subclass 650. Process in which dissolved material (i.e., including ionic) is removed from a liquid.

(1) Note. Reverse osmosis is the usual process for which this subclass provides. See OSMOSIS under the GLOSSARY.

653 **Utilizing specified membrane material:**
This subclass is indented under subclass 652. Process reciting named membrane material.

SEE OR SEARCH THIS CLASS, SUBCLASS:
641, for a process using diverse membranes.

654 **Synthetic resin:**
This subclass is indented under subclass 653. Process in which the membrane is constructed of a manufactured polymeric material exhibiting properties similar to those of a natural resin (e.g., film forming).

(1) Note. Synthetic resins, per se, are classified in Class 260, Chemistry of Carbon Compounds, subclasses 201+ (including the 520 series of classes).

655 **Cellulosic:**
This subclass is indented under subclass 653. Process in which the membrane is constituted of a naturally occurring polymeric carbohydrate, usually derived from wood, cotton, or flax.

656 **Chromatography:**
This subclass is indented under subclass 600. Process in which a solid sorbent competes in affinity with a relatively moving carrier liquid or solvent for a constituent such that the constituent is moved through the sorbent at a rate slower than the liquid and determined by the equilibrium or partition coefficient of the liquid-sorbent combination.

(1) Note. The process may separate more than one constituent with different partition coefficients, selectively spacing said constituents in consequence of the differing equilibria in the constituent liquid-sorbent combinations.

(2) Note. The processes provided for in subclasses 633, 634+, 656+, and 660+ utilize similar functions based on relative attraction or repellancy of materials and an explanation of the distinction between the concepts of subclasses 633 and 634+ on the one hand and subclasses 656+ and 660+ on the other hand, is given in the definition of subclass 634.

(3) Note. A process in which a liquid or organic gel acts as a sorbent is a liquid/liquid solvent extraction process and a patent to such a process will be placed in subclass 635. The organic gels exhibit a resilient or plastic property indicative of the underlying liquid nature. Silica gel (inorganic) which has the characteristic of a solid granular mass is not a gel-type sorbent for that subclass (635) and a process using silica gel is classifiable in this or an indented subclass.

SEE OR SEARCH THIS CLASS, SUBCLASS:
635, for a liquid/liquid or gel-type chromatography, such as partition chromatography process, and see (2) Note supra.

SEE OR SEARCH CLASS:
73, Measuring and Testing, subclasses 19.02, 23.35+ and 61.43 for a test involving chromatography.
95, Gas Separation: Processes, subclasses 82+ for processes of gas separation using chromatography.

16-B3

Related Proceedings Appendix

There are no related proceedings cited in this Appeal Brief.